

SOLUTIONS

PROJECT HIGHLIGHTS



RESEARCH PROGRAMS

Spring 2014

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Partnership for the Transformation of Traffic Safety Culture Transportation Pooled Fund (TPF) Program

<http://www.pooledfund.org/Details/Solicitation/1368>

The Montana Department of Transportation (MDT), in collaboration with the Center for Health and Safety Culture (CHSC) at the Western Transportation Institute (WTI), Montana State University (MSU), is initiating a pooled-fund study on traffic safety culture.

This program will be a cooperative effort of participating state DOTs and other (traditional and non-traditional) organizations with a vested interest in traffic safety. This long-term partnership will support an evolving and integrated project portfolio developed and revised each year by the partners, and will complement other related research activities, such as NCHRP 17-69 - *A Strategic Approach to Transforming Traffic Safety Culture to Reduce Deaths and Injuries*, NCHRP 20-24(96) - *Improving Organizational Traffic Safety Culture in DOTs Domestic Scan*, and state DOT Strategic Highway Safety Plans (SHSP). Together, these projects and activities will accelerate the development and delivery of tools and services to transform the national, state, and community level traffic safety culture. The goal of this transformation is to support the Toward Zero Deaths (TZD) vision with sustainable traffic safety solutions.

The national Towards Zero Deaths (TZD) Safety Initiative is a cooperative and coordinated effort amongst state highway safety agencies and stakeholders. The transformation of the traffic safety culture is a primary element of the TZD strategy. Only through the growth of a positive safety culture can significant and sustainable reductions in crash fatalities and serious injuries be achieved. Such transformation would not only support traffic safety goals by reducing risky behaviors and increasing protective behaviors, it would also increase public acceptance of other forms of effective traffic safety programs.

As a starting point, the proposed pooled fund program will direct research to measuring, analyzing, and transforming the cultural factors that influence the most common behavioral risk factors at the national and state level (Figure 1).

In this context, this program will involve the conduct of research to solve specific culture-based traffic safety problems, development of training and education materials to enhance workforce understanding and application of traffic safety culture methods, and technology transfer of best practices in traffic



safety culture methods to all stakeholders. Together, these efforts will support the transformation of traffic safety culture within the families, communities, and organizations of participants.

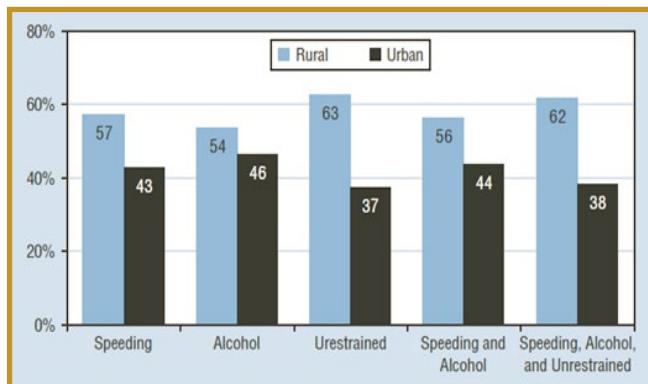


Figure 1. Common Behavioral Risk Factors at National and State Levels (DOT HS 810 812).

This partnership will support an integrated and multi-year program of research in a long-term effort to support the transformation of state and national traffic safety culture. Partners will determine the priority issues in each year. A work plan will then be developed for the selected priority issues. These work plans are expected to have three levels of scope.

First, the partnership may generate ideas for general “services and tools” within the general “action framework” to meet the traffic safety goals of partners. For example, stakeholders participating at the recent National Roadway Safety Culture Summit identified a number of common needs to support the transformation of a positive safety culture for the driving public and traffic safety organizations:

- Develop online courses for workforce development in the understanding and application of traffic safety culture transformation methods.
- Explore, synthesize, and define noteworthy practices both within and outside the transportation industry for developing and sustaining an organizational safety culture.
- Identify strategies, develop transformational leadership training, and develop supporting materials to help leadership promote traffic safety culture.

- Develop standardized survey tools, administration protocols, and analysis methods to access impacts of efforts to transform traffic safety culture.
- Create a repository of literature and case studies of best practice relevant to the transformation of traffic safety culture and the formation of safety culture partnerships.
- Create an online forum to which professionals (professional societies and other stakeholder groups) can collaborate to promote safety culture.

Second, this program could conduct research directed to traffic safety problems that have a common cultural component shared by many communities and jurisdictions across the participating partners. For example, Figure 1 includes common behavioral risk factors that are evident both at the national level and identified in many state SHSP.

Third, this program also can be used to implement a limited number of demonstration projects of specific traffic safety culture transformation studies within a few selected communities. These efforts could then be applied to every state that develops a SHSP with an interest in transforming safety culture among the agency and driving population. Depending on the results, these projects can then be modified and expanded for implementation within other partner communities, either through the current program or as a separate pooled fund project amongst participating partners.

The benefits from this pooled fund project include a wide variety of tools and services including completed tools for implementation and deployment, workforce development and training delivery, best practice case studies, and traffic safety culture project development and evaluation. These benefits will be of mutual interest and benefit to pooled fund partners.

For more information visit <http://www.pooledfund.org/Details/Solicitation/1368> or contact Sue Sillick (ssillick@mt.gov or 406.444.7693).



Experimental Projects Scheduled for Construction in 2014

Polyvinyl Chloride (PVC) for Use in Drain Lines

A profile wall PVC pipe (18"/45.7cm-12"/30.5cm) meeting ASTM F949 has been chosen as an experimental pipe material for the trunkline and laterals of a project in Miles City. Profile wall PVC will also be used for connection into the existing storm drain laterals east of the Tongue River Slough. Project web page: <http://www.mdt.mt.gov/research/projects/pvc.shtml>.



Shrinkage Reducing Admixture (SRA) and Synthetic Polyolefin Fibers (SPF) to Mitigate Early Age Bridge Deck Cracking

Early age bridge deck cracking has been an issue for MDT and other states. Bridge deck cracking allows water and deicing chemicals to infiltrate the deck, which can result in reduced service life. In an effort to reduce this early-age cracking, this project, located near Columbus, involves a modification of MDT's current special deck (SD) concrete mix by adding a combination of a Shrinkage Reducing Admixture (SRA) and Synthetic Polyolefin Fibers (SPF). The project web page is pending.



Poly-Carb Mark High Friction Bridge Deck Treatment

The treatment system will consist of an application of Poly-Carb MARK – 135 SAFE-T-SEAL gravity fed crack repair system, followed by an application of the Poly-Carb MARK-163 FLEXOGRID Overlay System, on select bridge decks in Kalispell and Roundup. These treatments were selected due to documented performance, limited variables (not mixed with squeegees), and other product attributes which are anticipated to yield a more durable friction application. Project web page: <http://www.mdt.mt.gov/research/projects/polycarb.shtml>.





Kwik Bond PPC 1121 Polyester Polymer Concrete (PPC) Overlay

Located in Stillwater County, this project involves a bridge deck rehabilitation system, by the incorporation of an engineered composite polyester polymer concrete overlay system. The purpose of which is to rehabilitate ride defects; seal out moisture, oxygen and chloride ions from permeating into the deck; and return traffic in two hours (based on thickness of overlay), at temperatures down to 40°F. Project web page: <http://www.mdt.mt.gov/research/projects/kwikbond.shtml>.



Tencate Mirafi H2Ri—High-Strength Woven Geosynthetic with Wicking Capability to Mitigate Frost Heave Distress

TenCate Mirafi H2Ri is a geotextile material with wicking (or capillary) characteristics capable of breaking the vertical movement of moisture through the underlying road base. This is accomplished by integrated hydrophilic and hygroscopic fibers that provide wicking action through the plane of the geosynthetic, wicking moisture laterally, reducing moisture accumulation beneath the pavement, and decreasing the damage caused by the freezing and thawing of water beneath the pavement surface. A section of road just north of Fort Peck has been chosen for this treatment due to severe frost heaving in that area. The project web page is pending.



Sprayroq-Spraywall Polyurethane Applied Lining for Culvert Rehabilitation

MDT selected Sprayroq's protective lining system SprayWall to rehabilitate a 12' by 250' corrugated steel culvert just north of Alberton on Interstate 90. SprayWall involves the use of a spray-applied polyurethane coating as the lining medium. It is a 100% volatile organic compounds (VOC)-free self-priming polyurethane coating, which reinstates structural integrity; provides infiltration control; and provides chemical resistance for concrete, steel, masonry, fiberglass, and other surfaces. The manufacturer states, on average, the treatment allows return to active service within an hour of application. The project web page is pending.





Evaluation of Durable Traffic Pavement Marking Tape (PMT)

Pavement marking durability is a challenge in areas that have high average daily traffic (ADT). Typically epoxy markings begin to degrade within two months, with total failure occurring between 14-18 months. Waterborne paint performs even worse, typically with only about three months of life. Two high ADT intersections in Helena have been selected to receive two new pavement marking tape applications: Swarco Director 35 Intersection Grade Permanent Pavement Marking Tape and 3M's Stamark Pavement Marking Tape. The project web page is pending.

For more information on these or other experimental projects, contact Craig Abernathy (cabernathy@mt.gov or 406.444.6269). Information of all experimental projects can also be found at http://www.mdt.mt.gov/research/projects/exp_sub_listing.shtml.



LIBRARY CORNER

Literature Search vs. Literature Review - What's the difference?

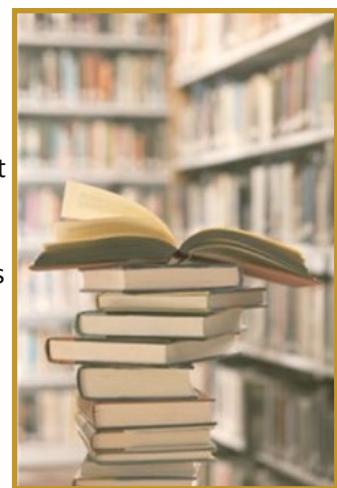
Although the terms “literature search” and “literature review” seem similar, there are some important distinctions between them. Defining these terms and recognizing their differences can give practitioners a clearer understanding of the process of finding and using information that gives context to transportation research. Distinguishing the terminology can also help to provide a common language, so that everyone’s on the same page.

The literature search is: “the methodical investigation of all published sources for information bearing on a usually scientific or technological subject” ([Merriam Webster online dictionary, 2014](#)). Basically, the literature search is the seeking and acquiring aspect of using information. A strong literature search involves thoroughness in identifying and obtaining high quality, relevant resources.

Familiarity with where to search and how to search for information can impact the success of the literature search. Looking up terms or phrases through Google alone is generally neither efficient nor sufficient to

ensure that all relevant materials are identified. The [MDT Library homepage](#) offers links to some websites and databases, including MDT’s library catalog, that can be useful for finding transportation literature. Additionally, working with a librarian to find resources can greatly enhance the quality and thoroughness of your search. Librarians are trained in finding information for patrons; literature searches are one of the services available to MDT staff through the MDT Library.

As you discover information in performing your search, it is important to evaluate its quality and accuracy. Using bad information many times has negative consequences, so it’s worth a little bit of effort to ensure the quality of what you find. These guides provide further information on evaluating





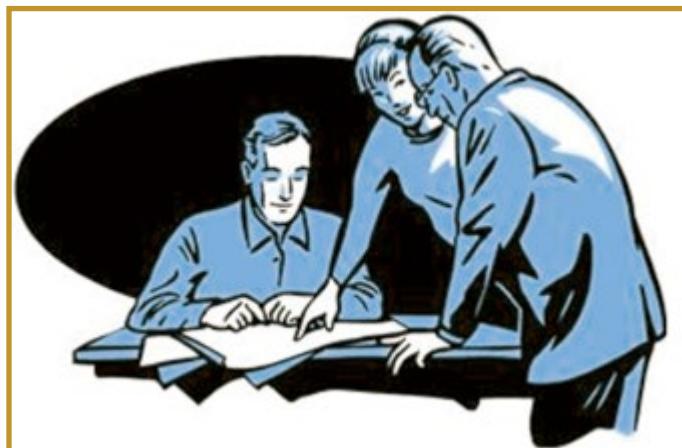
the quality of online resources: [John Hopkins Library Guide](#) and [UC Berkeley Guide](#).

Finally, many resources can be accessed directly, online, and free of charge. If you come across articles or materials that are difficult to obtain or require payment for access, the best option is to work with your library to request the materials through interlibrary loan (MDT Library offers this service for MDT employees).

While a literature search is the seeking and acquiring of information related to a topic, the literature review is the next step in the process. After the resources are gathered, the content should be read and analyzed for relevance to a research topic or question. This analysis is then usually organized and written to be what is called a "literature review".

Mattson and Riplinger ([2008, slide 4](#)) point out that a literature review is often needed for the following reasons:

- to justify particular methodologies or approaches to research (by informing the researcher which methods were previously validated or invalidated)
- to compare and contrast the available information with hypotheses, results, and conclusions
- to provide credibility to the researcher, that he or she has a solid knowledge foundation for that particular topic



[NCHRP Report 20-45](#) (Volume 1, Chapter 5, under the 'Literature Review' heading) identifies some qualities of a successful literature review, including: "good organization of the topics, a thorough understanding of the material, and a fluid writing style". Other qualities might include addressing a range of viewpoints as well as making sure to cover trends and gaps in the literature relating to the topic. [Robert Bertini's 2012 guide](#) (page 8) additionally makes the point that a literature review is more than just summarizing the information; it's about providing context and answering questions.

Basically, the literature search and the literature review, while both dealing with information, are different steps in the process of acquiring and using it to give context to research. The literature search involves finding and obtaining resources. This is followed by the literature review, where the already gathered literature is examined and analyzed. Both have varying characteristics that determine their level of quality, as well, because they are fundamentally different. Note: The TRB [Conduct of Research \(COR\)](#) and [Library and Information Science for Transportation \(LIST\)](#) Committees, and MnDOT are collaborating to develop a resource that will provide information on these two topics - how and where to search for information, and how to pull the information together in a competent literature review. Stay tuned. Also, there is a webinar being held on Tuesday, April 29, 2014 from 10 am - 12 pm MDT, the title of which is *From Literature Searching to Literature Analysis: How to Create Insight with Search Results*. [Register](#) for this event.

Exploring these two terms in more detail hopefully clarifies the main differences between them and gives you a better understanding of what each signifies. Please contact Katy Callon (kcallon@mt.gov or 406.444.6338) if you have questions or need any assistance.



DID YOU KNOW?

Updated Transportation Journals List

In the [summer 2013 issue](#) of MDT's Research Newsletter, the Library Corner featured an article about online transportation periodicals, announcing that work was being done to create a more complete, updated electronic list. The [list](#) is now complete and is posted on the [MDT Library homepage](#).

This list was developed in response to a library needs assessment conducted through meetings with MDT supervisors in all divisions. Electronic format was generally preferred since it offered easier access to content than print. Several titles were included in the list based on suggestions from these meetings.

The list contains over 200 titles related to various aspects of transportation and includes links to Transportation Research Board serial publications, such as reports, web-only documents, digests, the TR News, and Transportation Research Records. It is organized by subject categories, which are easily accessible by using the quick links. When you click on a quick link, you'll be re-directed to that subject and its related periodicals. If you want to return to the top, you can do so either by scrolling or clicking the "Back to the Top" link at the end of each category.

Each serial title is hyperlinked to online content, and many of the articles in each publication

are freely available. Next to several of the hyperlinked titles are links to RSS feeds. These feeds will allow you to see the latest articles or content posted to determine if the information is relevant to your interests. If there is a publication of interest, you can also subscribe to the feed, and then you'll receive notifications when new content is added.

For those less familiar with this technology, RSS stands for "Really Simple Syndication". Feeds allow you to see updates in one spot, delivered to you, so that you don't have to re-visit the website on a regular basis to see what's new. You can subscribe to the feed so it's available in a folder on your web browser. When new items are available for you to review, the folder name will be in bold (the bold lettering lets you know there's something new). If you have Outlook 2010, you can even set up the RSS feed to be delivered through e-mail directly to an RSS folder; [these instructions](#) can help if it's your first time (for Outlook, see the *Manually enter a New RSS Feed Subscription* section). It doesn't take up very much space and is relatively simple to configure.

Please contact Katy Callon (kcallon@mt.gov or 406.444.6338) if you have questions or need any library assistance.

Solicitation for Research Project Ideas

We need your ideas by April 30, 2014!

MDT conducts research to discover, develop, or extend knowledge needed to operate, maintain and improve the statewide multi-modal transportation system. Specific goals include: evaluation and advancement of new technologies, materials and methods;

development of design and analysis techniques; and study of current transportation challenges.

Every year, Research staff solicits for new research topics. Topics can be submitted at any time; however, they are due by April 30th of each year and may only be considered once a year during our annual solicitation.



New topics are chosen by MDT's [Research Review Committee](#) in May of each year and proceed to technical panels, which determine if a research need exists and the most effective and efficient manner in which to conduct the research. Further information and solicitation problem statement forms can be found at <http://www.mdt.mt.gov/research/unique/solicit>.

[shtml](#). Information on various past and current research projects can be found at http://www.mdt.mt.gov/research/projects/sub_listing. [shtml](#). For more information, contact Sue Sillick (ssillick@mt.gov or 406.444.7693).

MDT Research and Library Customer Appreciation Day - April 16, 2014

On April 16th from 9:30 AM – 11:30 AM, we will be hosting a Customer Appreciation Day at MDT Headquarters, Auditorium East, to showcase MDT's research and experimental projects, library services, and resources available to our customers. This event will feature snacks, games, and prizes. This event coincides with National Library Week; the theme this year is "Lives Change @ Your Library". We will have displays and posters to explore ways that the MDT Library can have an impact on those we serve. Please feel free to stop by; we'd love to talk to you more about the services we offer and to show how much we appreciate your ongoing support. If you have any questions, please contact Katy Callon (kcallon@mt.gov or 406.444.0871).



NEW RESEARCH REPORTS

[A Peer-to-Peer Traffic Safety Campaign Program Guidebook](#)

A listing of all past and current projects can be found at http://www.mdt.mt.gov/research/projects/sub_listing.shtml.

NEW EXPERIMENTAL REPORTS

[Crash Attenuator - Smart Cushions Innovations \(SCI\) Construction and Evaluation Report](#)

[Detectable Warning Devices \(DWD\) Construction and Evaluation Report \(2014\)](#)

[Ribbed Aluminum Box Culvert \(ABC\) Constriction and Annual Evaluation Report \(2014\)](#)

A listing of all past and current projects can be found at http://www.mdt.mt.gov/research/projects/exp_sub_listing.shtml.



CALENDAR OF EVENTS

April

National Library Week 4/13-19/14
MDT Research & Library Customer Appreciation Day 4/16/14
NCHRP 20-07 Research Ideas Due 4/19/14
NCHRP 20-24 Research Ideas Due 4/19/14
FHWA - Planning & Environment Pre-Proposals Due 4/23/14
MDT RRC Meeting 4/29/14
MDT Research Topic Statements Due 4/30/14

May

Transit IDEA Proposals Due 5/1/14
AASHTO Spring Meeting 5/3-7/14
MDT RRC Meeting 5/28/14
SHRP 2 Round 4 Implementation Assistance Solicitation Opens

June
NCRP Research Problem Statements Due 6/15/14
TCRP Research Ideas Due 6/16/14

MDT RRC Meeting 6/25/14
SHRP 2 Round 4 Implementation Assistance Applications Due 6/27/14
Infravation Proposals due 6/30/14

July

AASHTO RAC Meeting 7/21-24/14
MDT RRC Meeting 7/30/14

August

MDT RRC Meeting 8/27/14

September

Highway IDEA Proposals Due 9/1/14
NCHRP Project Statements Due 9/15/14
Rail Safety Idea Proposals Due 9/16/14
Transit Idea Proposals Due 9/16/14
MDT RRC Meeting 9/24/14



REMINDER

Information on research services and products, such as research and experimental project processes and reports and technology transfer services, can be found on the Research web site at www.mdt.mt.gov/research.

MDT's library collection can be searched through the [library catalog](#). The catalog and other information resources are available through the [MDT Library web site](#).

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